COOKIA

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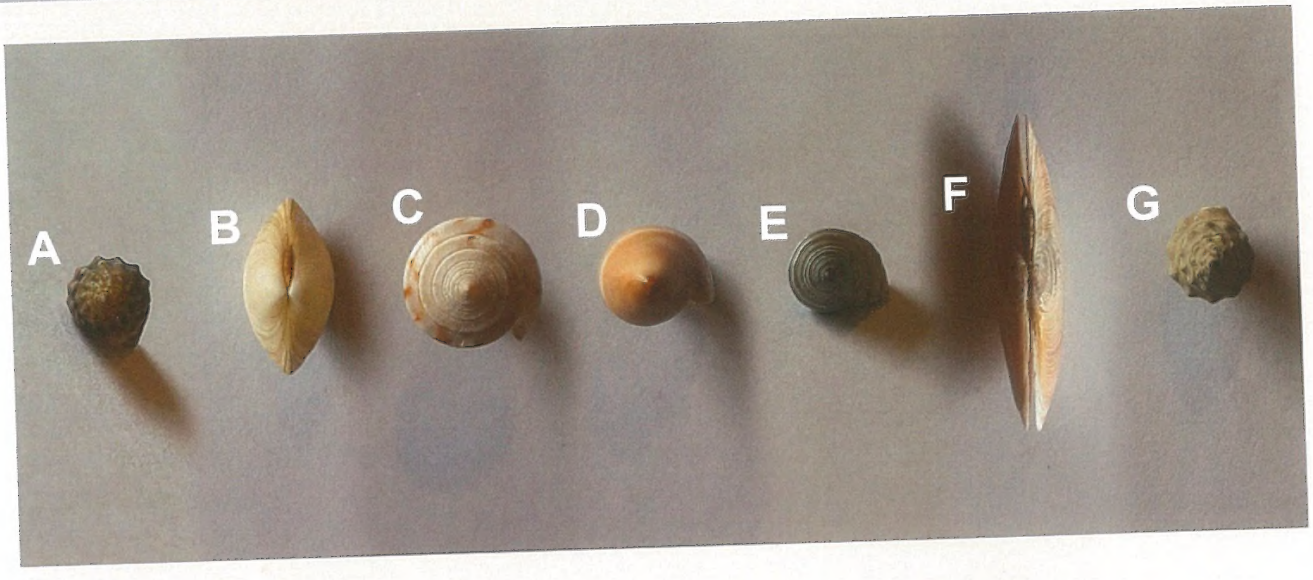
Future of our COLLECTIONS | *Tateidae* | Going **VIRAL** | *Shipworms: Termites of the sea*

Identification challenge:



Solution inside rear cover

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Editorial

No editorial for a 2020 issue can begin without acknowledging that this has been one strange year. "May you live in interesting times" was a curse in ancient Greece that at last makes sense. As the world falls into simultaneous crises - climate, covid and economic - it is naive to hope that January 1st will mark a turning point. On the bright side, we can reflect on New Zealand's comparatively effective response to covid, and for many, enjoy additional time in one's shell room.

The Wellington Shell Club has weathered many interesting times in its history. Membership numbers today near an all-time high, but is all well? Our aging membership base leads one to speculate as to the size and activities of the club in 20 years. There will always be collectors in New Zealand. However, it now seems pertinent to consider the immediate future of our club – our resources, Committee, constitution and *Cookia*. Are we prepared? Will anyone step up? And in what direction would we like to see the club heading?

Kerry Walton

Cover photo:

***Maurea tigris* (Gmelin, 1791) by SCUBA, 5 m under rock slab, Chetwode Islands, Marlborough Sounds, New Zealand.**

Range expansion of the adventive marine snail *Tritia burchardi* (Dunker, 1849) in New Zealand

by Kerry Walton & Javier Couper

The carnivorous dog-whelk *Tritia burchardi* (Dunker, 1849) is native to Australia, where it predominantly lives on sand-flats at low- to mid-tide. This species was first detected in New Zealand in Waitemata Harbour in 2009 (Townsend et al. 2010) and has now become firmly established. The pelagic larval phase lasts approximately three weeks (Borysco 2008). It is thus unclear if the species dispersed here naturally or through human movements, although we would be inclined to suspect the latter.

Until 2012, *T. burchardi* was known in New Zealand only from Waitemata Harbour. That year, the species was discovered at Ti Point (Margaret Morley pers. comm. 2012) and Whangarei Harbour (Kerry Walton). The East Auckland Current moves north to south along the north-eastern North Island, and it is possible the Ti Point and subsequent Te Arai Point records (both between Whangarei and Waitemata Harbour) resulted from spatfall travelling along this current from Whangarei. Potentially the species had been living unnoticed in Whangarei for some years prior to 2012. As New Zealand's second busiest port (at least pre-Covid 19!), Whangarei is a likely point of entry for adventive taxa.

In 2019, *T. burchardi* specimens were discovered in Kaipara Harbour (Tupe *et al.* 2019), Manukau Harbour and Snells Beach (latter two, Javier Couper), and at Bland Bay (Eric Scott, pers. comm. 2020). In 2020, specimens were discovered at Houhora Harbour (Andrew Spurgeon, pers. comm. 2020), Taupiri Bay and the Sandspit (latter two, Kevin Burch pers. comm. 2020) and Tauranga Harbour (Javier Couper). It is not clear if the spate of recent discoveries is evidence of recent spread of the species within New Zealand, or a combination of chance and recent search effort. The extent of further spread remains to be seen. As it can survive in Tasmanian conditions, it seems probable that it will continue to expand its range in New Zealand. Impacts of *Tritia burchardi* on ecologically similar species such as *Xymene plebeius* (Hutton, 1873) and *Cominella glandiformis* (Reeve, 1847) remain to be seen, although no superficial changes in the abundance of these native species has been observed.

References:

BORYSCO, L. 2008. Effects of the synthetic hormone 17α-ethynylestradiol on the reproduction and early life histories of the estuarine gastropods *Nassarius burchardi* and *Nassarius jonasii*. Ph.D Thesis, University of Western Sydney Hawkesbury.

TOWNSEND, M., MARSHALL, B.A. & GREENFIELD, B.L. 2010. First records of the Australian dog whelk, *Nassarius* (*Plicarcularia*) *burchardi* (Dunker *in* Philippi, 1849) (Mollusca: Gastropoda) from New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 44(4), 343-348. https://doi.org/10.1080/00288330.2010.511676

TUPE, M., WOODS, C. & HAPPY, S. 2019. Kaipara Harbour targeted marine pest survey, May 2019. *Auckland Council Technical Report*, TR2020/008.

***Tritia burchardi* (Dunker, 1849), Houhora Harbour, Northland. Photo: Kerry Walton.**

Bay of Plenty wash-up

October 2019 saw a large wash-up of shells along the western Bay of Plenty coastline. Among them were numerous *Tonna tankervillii* (Hanley, 1860) - not a rare species, but always a joy to find. *Tonna* specimens are always worth a careful check as there are several much rarer yet superficially similar species in New Zealand: *T. luteostoma* (Küster, 1857) and *T.* cf. *cumingii* (Reeve, 1849) among them. While not of the same magnitude, wash-ups including multiple *Tonna* specimens have continued into late 2020 in the region.

Left, below: Mt Maunganui Beach, 18 October 2019. Photo: Sam McCormack.

Left, above: Shells from Waihi Beach, 19 October 2019. Photo: Derrick Crosby.

Above, top: Waihi Beach, 18 October 2019. Photo: Claire Elliot.

Above: *Tonna cumingii* (Reeve, 1849) 55 mm beached between Hart St and Tay St, Mt Maunganui, 18 October 2019. Photo: Matthew Jones.

Small and special ..

Tateidae is a family of very small and minute aquatic gastropods. Pete Cresswell is fond of small molluscs, as are Kathy Carson and Bert van Tiggele. Pete's association with this family is strengthened by the fact that he has a species named after him - *Rakiurapyrgus cresswelli* (Climo, 1974). And if small can be beautiful – it can also be powerful. Were New Zealand to make a claim to conquering the world, it might be via another member of this family, our endemic *Potamopyrgus antipodarum* (Gray, 1843). This little critter has established itself in dozens of countries. The International Red List of Threatened Species, version 2020-2, rates *P. antipodarum* as widespread and highly invasive. So the world might yet be worried about the "and wait, there's more" nature of Pete's story and Kathy's find. In addition, Bert van Tiggele has compiled, as a helpful tool for enthusiasts of these tiny creatures, a table summarising details of known Tateidae from the South Island of New Zealand, using Haase's 2008 paper as his source, though we haven't been able to reproduce that here.

New Zealand Tateidae

by Pete Cresswell

Martin Haase, in his 2008 paper on the radiation of New Zealand hydrobiid gastropods (since removed from Hydrobiidae and placed in Tateidae) undertook an update of these small, often subterranean living snails of New Zealand. Haase made fundamental changes to the then taxonomy, which had been developed by several earlier authors between 1844 and 1977. He described 46 new species, building significantly on the 18 species described previously, and compared New Zealand species numbers with those of Australia and New Caledonia: approximately 300 and 100, respectively. In both cases the numbers seemed consistent with other well documented areas of the world (Haase 2008:99). Haase also described 10 new tateid snails from Vanuatu – a relatively small collective land mass (Haase *et al.* 2010). In short, even after his 2008 publication, it seemed to Haase that New Zealand should provide many additional species. This sentiment is shared by New Zealand malacologists.

One of the richest regions for tateids is Tasman-Buller, where processes of monophyletic radiation (the spread of an organism from a common ancestor) have occurred though the geological opening, closing, and changing of underground pathways. Of the 60 recorded New Zealand species, some 41 identified to date occur in Nelson or Buller districts (respectively 31 and 10). Both districts contain extensive karst – the landform that is created, over many millennia, by the dissolution of limestone. From the ensuing caves and underground passages, species radiation is not surprising. Haase also indicated, in many cases, that a number of species appeared to be restricted geographically and often were only known by very few specimens.

Multiple species of dead tateids (the white specks) collected by Dr Rob Davies from 200 m inside Cottage Cave, East Takaka. Many damaged – many complete. Photo: Pete Cresswell.

Earlier this year I endeavoured to test the range of some of the subterranean tateids and, not unexpectedly, I found them to be less restricted than the available records indicate (see box on next page).

In addition to these records, indicating a much wider geographic spread of some species, other likely undescribed species of tateids have been found. One, in sand washed from Tennis Court Cave, Pohara, Nelson.[1] This single specimen is insufficient to make a confident determination. Dr Bruce Marshall examined a series of high-spired snails from 200 m inside Cottage Cave and determined them to be two (possibly three) undescribed species of unspecified genera.[2] This series has been similarly split between Te Papa and my own collection. The need for live material for DNA and anatomical data is very evident!

Further evidence of greater tateid diversity and distribution was disclosed from a sample from the

Catapyrgus fraterculus Haase, 2008. Recorded from caves in Patarau, West Nelson and Commentary Cave, Upper Takaka (Haase 2008:137). I found this species in sand taken from Ironstone Creek, East Takaka. Existing geological linkage, at least with Upper Takaka, is highly likely, with much older links to Patarau also likely (Mueller, 1991).

Catapyrgus sororius Haase, 2008. Recorded by Climo (as *Catapyrgus spalaeus* in part) from Ida Cave, Oparara (Climo 1974: 268; Haase 2008: 137). Not otherwise recorded from any other locality. I found this species dead in a seepage off the track to the Arches in the Oparara Basin.[3]

Catapyrgus spelaeus Climo, 1974. Recorded from "cave streams round Patarau and in the Aorere Valley" (Haase 2008: 136). I have specimens from: Spittal Springs, Totara Cave and Green Bower Cave – all near one another in East Takaka. Common groundwater of these three systems is probable.[4] While East Takaka is a considerable distance away from the published localities, paleogeological connections may be inferred (Mueller, 1991).

Kuschelita mica Climo, 1974. *Kushelita*, with two species, was erected by Dr Frank Climo, and is known only from groundwater obtained from wells in Nelson (*K. mica*) and Napier (*K. inflata* Climo, 1974). The former is represented by multiple specimens, the latter by only a single, dead specimen (Climo 1974:266). Haase, understandably, was reluctant to be definitive as to the latter's generic placement (Haase, 2008:135). Given the known habitat of the genus, it was surprising to have it turn up from Cottage Cave. A small series of what appears to be this species has been divided between Museum of New Zealand Te Papa Tongarewa (Te Papa) and my collection.[5] Dr Bruce Marshall stayed cautious; expressing the obvious caveat for anatomy and DNA.

Kuschelita mica
Climo, 1974 - or?
Photo: Fiona Gower

Opacuincola caeca Ponder, 1966. Recorded only from the type locality: "Lower entrance of Gorge Creek cave, 1.6km east of East Takaka Road into Gorge Creek…" (Haase 2008:118). I have specimens from Spittal Springs and Scott Creek Springs – both adjacent to the East Takaka Road, some distance from Gorge Creek.[6] However, again, inferred paleocave systems persisting to the present, involving Gorge, Ironstone and Scott Creeks make it almost certain that all are currently connected underground (Mueller 1991). More difficult to interpret is the finding of two specimens from Ballroom Cave, Aorere.[7]

Opacuincola dulcinella Haase, 2008. Recorded by Haase from Thorpes Cave and Water Supply Cave in Pohara, Nelson (Haase 2008:120). It is also from Cottage Cave in East Takaka. Although a reasonable distance apart (about 20 km in a direct line) geological links between these localities are almost certain.[8] Kathy Carson has found this species in the Riwaka Stream – certainly having been washed from the underground resurgence. It is therefore much more widespread than Haase indicated.[9]

Opacuincola geometrica Haase, 2008. Previously known from only three empty shells found from Gorge Creek Cave, East Takaka (Haase 2008:128). Dr Marshall examined a small series from Cottage Cave and concluded them to "look like *O. geometrica"* (pers. comm.). Anatomical and DNA outcomes are necessary for conclusive determination. These specimens have also been split, with representatives in Te Papa and my collection.[10] This new locality is not surprising given the proximity of these cave systems.

Opacuincola johannstraussi Haase, 2008. Recorded from two caves in the Aorere Valley (Haase 2008:121). I have a single specimen from Commentary Cave in Upper Takaka that compares well with a series I have from Ballroom Cave in the Aorere Valley.[11] Commentary Cave is a considerable distance from the Aorere, although these localities may well be geologically linked.

Tangarakau Gorge, Taranaki. In addition to *Sororipyrgus kutukutu* Haase 2008, which is the only tateid hitherto recorded from there, I found what I regarded as the ubiquitous *Potamopyrgus antipodarum* (Gray 1843). Dr Marshall is not convinced (pers. comm.). This locality also yielded an unidentified specimen, perhaps with affinities to *P antipodarum*, but significantly taller, slenderer, with deep sutures and rounded whorls. Dr Marshall commented that this was "possibly *P. antipodarum*...". The need for more specimens is obvious.

Tateidae is a family with representatives that can be collected by almost every club member at roadside seepages, waterfalls, cave streams (at entrances) and springs. For those venturing into caves, be aware that live snails on walls are reported to fluoresce upon exposure to UV light (pers. comm. Dr Rob Davies) – making them potentially more easily collectible!

Footnotes:

[1] Register # 22240 in my collection.
[2] Register # 22376 in my collection.
[3] Register #21557 in my collection.
[4] Register #s in my collection: Spittal Springs [22236]; Totara Cave [22344] Green Bower Cave [22263].
[5] My specimens from this lot being register # 22374.
[6] Register #s in my collection: Scott Creek Springs [22266]; Totara Cave [22345].
[7] Register #22342 in my collection .
[8] Register #s in my collection: Water Supply Cave [16940] and Cottage Cave [22377].
[9] Register # 22435 in my collection.
[10] My specimens from this lot being register # 22375.
[11] Register #s in my collection: Ballroom Cave [22340]; Commentary Cave [21640].

Acknowledgements:
I acknowledge the very generous support given by Dr Rob Davies and Michelle Alison, on whose property in East Takaka, Cottage Cave and Spittle Springs are located. They provided crucial cave locality data, collected large numbers of snails from various cave sites and gave me much personal support - allowing this work to go beyond what it might otherwise have been. I also thank Dr Bruce Marshall, Honorary Research Associate at Museum of New Zealand Te Papa Tongarewa, for kindly examining, identifying, and commenting on collected material, and Kerry Walton, of the University of Otago, for checking and improvements to this article. Finally, my thanks to Fiona Gower of the Cawthron Institute, Nelson (in her private capacity), for the photo of *Kuschelita mica*.

An unexpected find near Pelorus Bridge, Marlborough

by Kathy Carson

Last year I visited the beautiful Pelorus Bridge area, about 50 km by road east of Nelson, to walk one of the scenic bush walks. Not far from the café, the track meandered for about 1 km to the '1st waterfall' (so named). The waterfall area was prolific in moss at either side of the cliff which looked promising for members of our Tateidae. After drying out the material, it yielded some little snails - but not then having any high-grade alcohol, it was a good excuse to one day revisit the area.

After a tiresome Covid-19 lockdown and with itchy feet, it was time to revisit the '1st waterfall' and this time, with 98% alcohol to preserve any specimens. I subsequently sent my finds to Dr Bruce Marshall at Te Papa for positive identification. His response was a surprise, as I had expected them to be *Hadopyrgus rawhiti* Haase, 2008, a species found in the not-too-distant Marlborough Sounds. Dr Marshall established them to be *Hadopyrgus anops* Haase, 2008, and appropriately preserved material is now lodged with Te Papa. These specimens had a light orange operculum and were approximately 2 mm in height. Haase's 2008 revision defined the distribution and habitat to be 'groundwater' in and around Nelson, with only two found from phreatic gravel in Lee Valley and a further few from wells near Nelson.

***Hadopyrgus anops* Haase, 2008**
Photo: Kathy Carson

This discovery significantly expands the range of distribution for *H. anops* and in addition determines them to be surface living, in moss, in fast flowing, clean water.

My special appreciation to Dr Bruce Marshall for his determination of my finds.

References:
CLIMO, F.M. 1974. Description and affinities of the subterranean molluscan fauna of New Zealand. *New Zealand Journal of Zoology* 1 (3): 247-284.
HAASE, M. 2008. The radiation of hydrobiid gastropods in New Zealand: a revision including the description of new species based on morphological and mtDNA sequence information. *Systematics and Biodiversity* 6 (1): 99-159.
HAASE, M., FONTAINE, B., GARGOMINY, O. 2010. Rissooidean freshwater gastropods from the Vanuatu archipelago. *Hydrobiologia* 637: 53-71.
MUELLER, M. 1991. Karst hydrogeology of the Takaka Valley, Golden Bay, northwest Nelson. *New Zealand Journal of Geology and Geophysics* 34 (1): 11-16.

A long distance traveller

by Kevin Mead

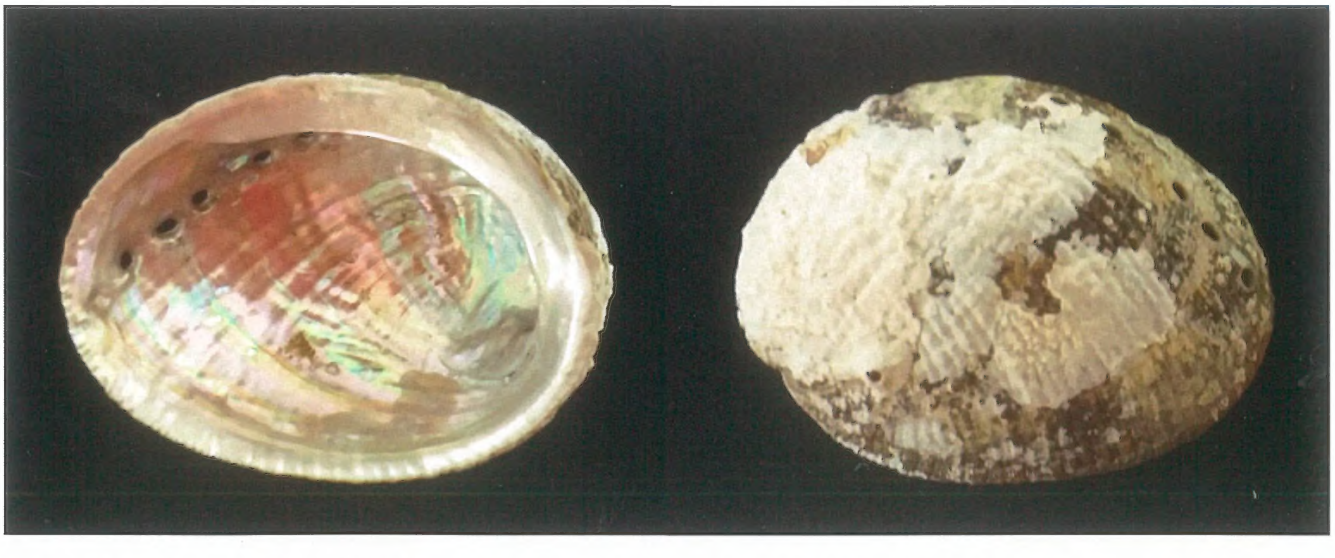
A few years ago, I was having a discussion with a Fisheries New Zealand officer and mentioned that I was a shell collector, especially family Haliotidae. He then went on to say he had a *Haliotis virginea huttoni* Filhol, 1880 specimen from the Auckland Islands, and he offered it to me.

Sometime later we met, and he kindly gave me the shell – this is when the story became very interesting. I asked how he had acquired the shell. He said he had visited a paua farm at Kaikoura and was given the shell there. He told me the shell, along with others, had been taken live from the Auckland Islands in 1993, and transported live by yacht to the experimental paua farm at Kaikoura, where it later expired.

One thing I really enjoy about shell collecting is having shells in my collection that bring back personal memories or have special stories about them. This *H. virginea huttoni* is a definitely one of them – it travelled over 500 nautical miles in its lifetime, and remains a prized specimen in my shell collection.

I have measured this shell with digital calipers and its size is 69.81 mm long x 51.92 mm wide.

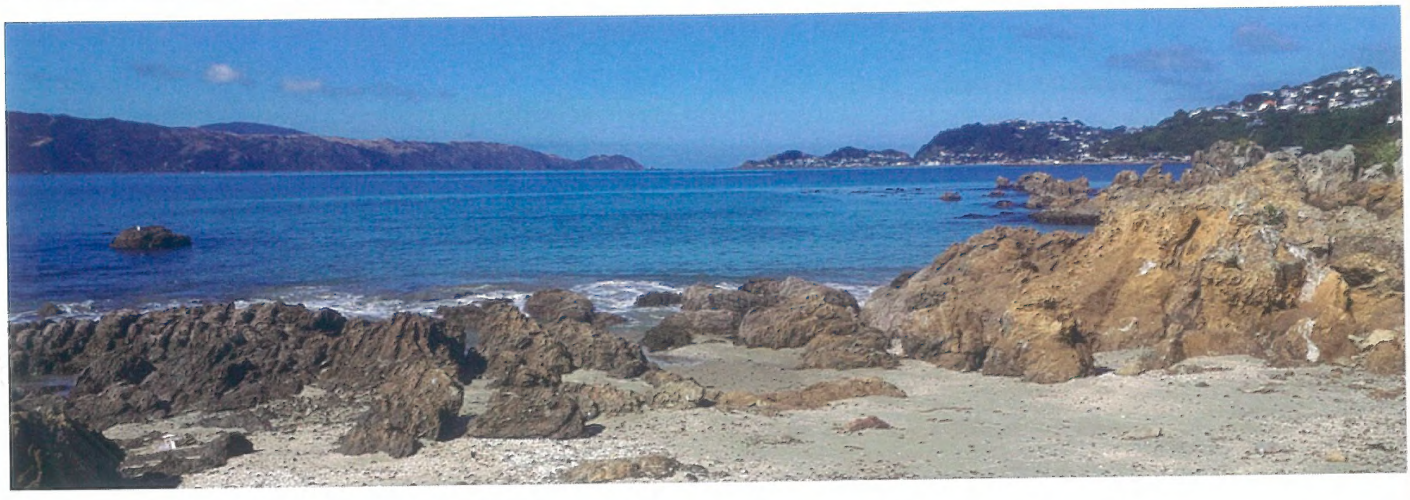
[Ed. note: And its size makes it, by 0.31 mm, the largest specimen on record according to the Auckland Shell Club's Register of Largest New Zealand Shells, which can be found at http://www.aucklandshellclub.net.nz/]



Kevin's much-travelled *Haliotis virginea huttoni* Filhol, 1880 - born in the Auckland Islands, now resident in Nelson via a stopover in Kaikoura. Illustrated here at more or less life size (yes, that probably is bias by one of your editors).
Photos: Kevin Mead.

Scorching Bay, Wellington

by Vivienne Robertson



For the past two years my husband Clive and I have been regular visitors to a small bay, almost surrounded by rocks, just north of Scorching Bay on the Miramar Peninsula in Wellington. I was recommended to visit there to obtain a complete example of the crebra form of *Dosina mactracea* (Broderip, 1835) because the attractive markings on these juvenile shells - once described as *Dosina crebra* (Hutton, 1873) but since synonymized - have always made them a nice find. This bay was also recommended to me as the only area in Wellington where *Roseaplagis artizona* (A. Adams, 1853) could be found.

This is a surprising area where, at varying times, I have found over 50 species of common shells, plus a few not quite so common. It is a small area, delightful on a sunny day and protected from some winds. At low tide the rock pools are very interesting, with many discoveries for young children. There is a wide tide range, so a watch needs to be kept that possessions put down temporarily are not suddenly floating away. Good safe parking is nearby, but for those who enjoy a coffee while exploring, an excellent café is only minutes away.

An interesting shell bank has built up over many years. After a storm or a very high tide, new material can be found sitting on top of it. Further down the beach area are small shells and deposits of shell sand. On one occasion, I was down on my hands and knees with magnifying glass in hand, looking for *R. artizona*, when I was joined by a young family, who keenly started looking, trying to help me. The Dad's comment was "This is what a real shell collector does".

The rocks here can be very sharp so gloves are a real boon if you want to reach the rock pools at low tide. Gaper shells *Panopea zelandica* (Quoy & Gaimard, 1835) and jingle shells *Monia zelandica* (Gray, 1843) have been found in them. Husband Clive, who is a reluctant collector, usually drops me at my 'spot', then goes off for a coffee and something tasty to go with it, and returns. He parks up with his coffee and treats, and newspaper or book. When the paper is read, I have to (reluctantly) leave. Some of the shells found in my many visits are listed below, and I still have some little shells from shell sand that I have yet to identify.

Gastropods

Cellana denticulata (Martyn, 1784)
Cellana ornata (Dillwyn, 1817)
Cellana stellifera (Gmelin, 1791)
Notoacmea scapha (Suter, 1907)
Notoacmea scopulina W.R.B. Oliver, 1926
Haliotis australis Gmelin, 1791
Haliotis iris Gmelin, 1791
Haliotis virginea Gmelin, 1791
Emarginula striatula Quoy & Gaimard, 1834
Tugali elegans Gray, 1843
Tugali suteri (Thiele, 1917)
Cantharidus dilatatus (G.B. Sowerby II, 1870)
Cantharidus opalus (Martyn, 1784)
Coelotrochus tiaratus (Quoy & Gaimard, 1834)
Coelotrochus viridis (Gmelin, 1791)
Diloma aethiops (Gmelin, 1791)
Diloma bicanaliculatum (Dunker, 1844)
Micrelenchus purpureus (Gmelin, 1791)
Roseaplagis artizona (A. Adams, 1853)

Zethalia zelandica (Hombron & Jacquinot, 1848)
Cookia sulcata (Lightfoot, 1786)
Lunella smaragda (Gmelin, 1791)
Herpetopoma bellum (Hutton, 1873)
Zeacumantus lutulentus (Kiener, 1841)
Zeacumantus subcarinatus (G.B. Sowerby II, 1855)
Maoricolpus roseus (Quoy & Gaimard, 1834)
Austrolittorina antipodum (Philippi, 1847)
Austrolittorina cincta (Quoy & Gaimard, 1833)
Rissoina spp.
Struthiolaria papulosa (Martyn, 1784)
Sigapatella novaezelandiae (Lesson, 1831)
Sigapatella tenuis (Gray, 1867)
Trichosirius inornatus (Hutton, 1873)
Tanea zelandica (Quoy & Gaimard, 1832)
Cirsotrema zelebori (Dunker, 1866)
Buccinulum linea (Martyn, 1784)
Cominella adspersa (Bruguière, 1789)
Cominella maculosa (Martyn, 1784)
Cominella virgata H. Adams & A. Adams, 1853
Penion sulcatus (Lamarck, 1816)
Haustrum haustorium (Gmelin, 1791)
Haustrum lacunosum (Bruguière, 1789)
Xymene plebeius (Hutton, 1873)
Zeatrophon ambiguus (Philippi, 1844)
Amalda australis (G.B. Sowerby I, 1830)
Neoguraleus lyallensis (Murdoch, 1905)
Neoguraleus sinclairi (Gillies, 1882)
Siphonaria australis Quoy & Gaimard, 1833
Siphonaria propria Jenkins, 1983

Bivalves
Linucula hartvigiana (Dohrn, 1864)
Neilo australis (Quoy & Gaimard, 1835)
Aulacomya maoriana (Iredale, 1915)
Modiolus areolatus (Gould, 1850)
Musculus impactus (Hermann, 1782)
Mytilus planulatus Lamarck, 1819
Perna canaliculus (Gmelin, 1791)
Xenostrobus securis (Lamarck, 1819)
Barbatia novaezealandiae (E.A. Smith, 1915)
Glycymeris modesta (Angas, 1879)
Ostrea chilensis Küster, 1844
Monia zelandica (Gray, 1843)
Pecten novaezelandiae Reeve, 1852
Talochlamys zelandiae (Gray, 1843)
Divalucina cumingi (A. Adams & Angas, 1864)
Purpurocardia purpurata (Deshayes, 1854)
Pseudarcopagia disculus (Deshayes, 1855)
Gari stangeri (Gray, 1843)
Austrovenus stutchburyi (W. Wood, 1828)
Dosina mactracea (Broderip, 1835)
Dosinia anus (Philippi, 1847)
Irus elegans (Deshayes, 1854)
Irus reflexus (Gray, 1843)
Leukoma crassicosta (Deshayes, 1835)
Tawera spissa (Deshayes, 1835)
Venerupis largillierti (Philippi, 1847)
Corbula zelandica Quoy & Gaimard, 1835
Panopea zelandica (Quoy & Gaimard, 1835)

[Ed. note: Good lists of shells that can be found in Wellington Harbour include:
MARSHALL, B.A. 1998. Marine Mollusca from Wellington Harbour and approaches. Appendix 5; 145-155 in EHEA, 1988: Te Whanganui a Tara Wellington Harbour. Review of scientific & technical studies of Wellington Harbour, New Zealand, to 1997. Eastbourne: East Harbour Environmental Association.
Cookia Journal of the Wellington Shell Club, New Zealand, past issues notably Vol. 14 June 2003 "Special Issue: The Wellington Shell Club lists". The latter is available online at http://www.wellingtonshellclub.org.nz/publications.]

Sequencing DNA from old *Cellana denticulata* shells

by Lucy Cathro, Francesca Day, Tenacie Evans, Hannah Hodgkinson & Kerry Walton

Abstract

For a 300-level genetics project at the University of Otago, we extracted and sequenced DNA from dry-preserved *Cellana denticulata* (Martyn, 1784) shells using ancient DNA methods. *C. denticulata* range from the Three Kings Islands to Kaikoura where they graze in rocky intertidal habitats. *Cellana* species have a short-lived pelagic larval phase. Uplift from the 2016 Kaikoura earthquake caused substantial *C. denticulata* mortality. We extracted and sequenced a 153 base-pair DNA sequence of the cytochrome B mitochondrial gene from five individuals from Kaikoura pre-dating the 2016 earthquake, and six individuals from Wellington. The sampled shells ranged in age from one to more than 20 years. Two of the three recovered haplotypes were shared between the two localities, indicative of connectivity between populations through larval dispersal. Accordingly, inclusion of post-earthquake Kaikoura samples was deemed unlikely to infer source population for limpet recovery. This study further demonstrates the potential of recent advances in ancient DNA relating to invertebrate research.

Introduction

Cellana denticulata is a common species of medium-sized limpet that ranges from the Three Kings Islands to Kaikoura. The species occupies the mid-tidal zone where they graze on algae (Morton & Miller, 1968). *Cellana* species have a short-lived pelagic larval phase estimated at 3-11 days (Goldstien et al., 2006). *C. denticulata* is the predominant limpet species in Wellington and Marlborough (Dunmore & Shiel, 2003; Phillips & Hutchinson, 2008). However, coastal uplift of up to six metres along a 110 km stretch of coast (Shiel et al., 2019) resulting from the 2016 Kaikoura earthquake caused significant mortality in intertidal species (Schiel et al., 2019).

Extinction-recolonisation dynamics are complicated; influenced by the extent and degree of disturbance events, the number of founder and resident individuals, dispersal pathways and more (Waters, Fraser & Hewitt, 2013). The mitochondrial gene cytochrome B (cytB) has been used in other studies of *Cellana* species' genetic structure in New Zealand (Goldstien et al., 2006), but curiously, *C. denticulata* was not included. Patterns of connectivity detected by Reisser et al. (2011) and Goldstien et al. (2006) have shown that *Cellana* species in New Zealand often have populations with weak phylogeographic structure.

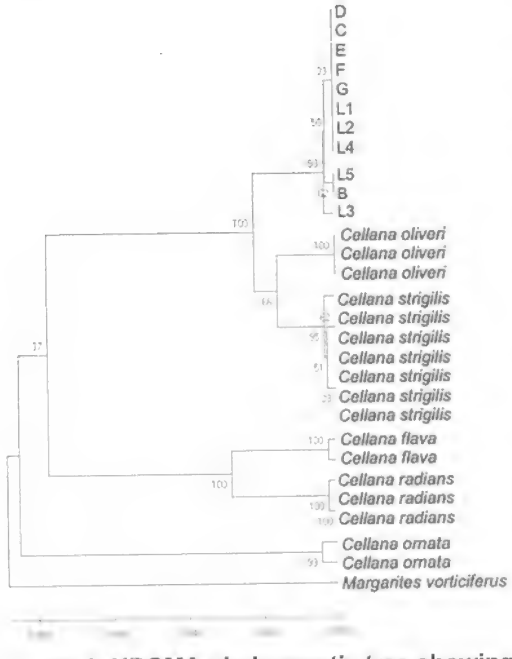


Figure 1: UPGMA phylogenetic tree showing possible relationships between *Cellana* species and populations. Samples D-G are *C. denticulata* from Wellington; samples L1-L5 are from Kaikoura and pre-date the 2016 earthquake.

Recent advances in ancient DNA methods (see Der Sarkissian et al., 2017) enable researchers, in some circumstances, to extract and sequence DNA from dry-preserved historic shell, rather than being restricted to ethanol-preserved fresh-tissue. As such, novel research questions can be addressed, such as testing if the limpets that recolonize the Kaikoura coastline are genetically similar to those that were there before 2016 or instead related to more distant populations, such as those in Wellington. CytB may not have adequate resolution to distinguish populations, but evidence of connectivity would suggest limpet dispersal from Wellington to Kaikoura as larva is possible.

Materials and Methods

See separate box.

Results

We retrieved a total of three unique haplotypes from our 11 sequenced samples. Of these, two were shared between Wellington and Kaikoura, while the third was only detected from Kaikoura.

Materials and methods

Samples of *C. denticulata* were sourced from old collections, from Kaikoura pre-dating 2016, and from Wellington, dating to around 2018. The shells had been stored dry at room temperature for between three and 40 years. 11 samples in total were analysed, five from Kaikoura (L1-L5) and six from Wellington (B-G).

Approximately 1 cm^2 of the shell was broken from an unencrusted part of the shell margin and ground to a fine powder with a mortar and pestle. We combined 100 mg of shell powder with digestion buffer (5 mL of 0.5M EDTA, 250 µL N-laurelsarcosyl and 60 µL Proteinase-K) in a 50 mL falcon tube and incubated overnight at 37°C. DNA was extracted following the Y1 protocol of Der Sarkissian et al., (2017). Digested supernatant was concentrated with an Amicon Ultra-15 30 kDa centrifugal filter. DNA was then isolated using a MinElute PCR purification kit (QIAGEN) and eluted in TET buffer.

CytB mitochondrial DNA was amplified using PCR with the primers: Cellana_CytB_F1: 5'(CTC AGC ATG ATG AAA CTT TF)3' and Cellana_CytB_R1: 5'(ATA TTW GCG GTG TAR TGT AT)3'. Each 10µL PCR solution contained 1x MyFi™ Mix 2x, 3.0 mg/µL BSA, 0.12 µM each of forward and reverse primer, 2.6 µL filtered H_2O and 1 µL of DNA template. Cycling parameters 94°C for nine minutes followed by 60 cycles of: 94°C for 30 s, 48° C for 30 s and 72°C for one minute. A final extension followed of 72°C for 10 minutes. Amplification success was visualized using gel electrophoresis. PCR products were purified using 1 µL of Exo-SAPIT per 10 µL reaction following manufacturer's instructions. The DNA was sequenced in both directions using an Illumina platform by Genetic Analysis Services at the University of Otago.

Sequences were trimmed to 153 base-pairs and aligned inMX alignment explorer from MEGAX web browser using default settings (Kumar et al., 2018). Outgroup sequences were sourced from GenBank. MX tree explorer (MEGAX; Kumar et al., 2018) to construct phylogenetic trees. Neighbour-joining, Minimum evolution and UPGMA trees were bootstrapped with 500 replicates and generated using default settings (Felsenstein, 1985; Tamura et al., 2004). PopArt was used to create a minimum spanning haplotype network map (Leigh et al, 2015).

Discussion

The extremely close and shared haplotypes retrieved imply high connectivity between the sampled populations (Wright, 1969). Although not conclusive, it seems probable that Wellington and Kaikoura populations were genetically connected before the 2016 earthquake, and as such, that Wellington could potentially serve as a source population for recolonisation of the Kaikoura coastline. Although Cook Strait has been proposed by many authors to act as a barrier to dispersal, many coastal marine species have demonstrated an ability to cross this passage (Walton et al. 2018). Connectivity across much greater marine distances has been detected in *Cellana* species using cytB (Goldstien et al. 2009; Reisser et al. 2011).

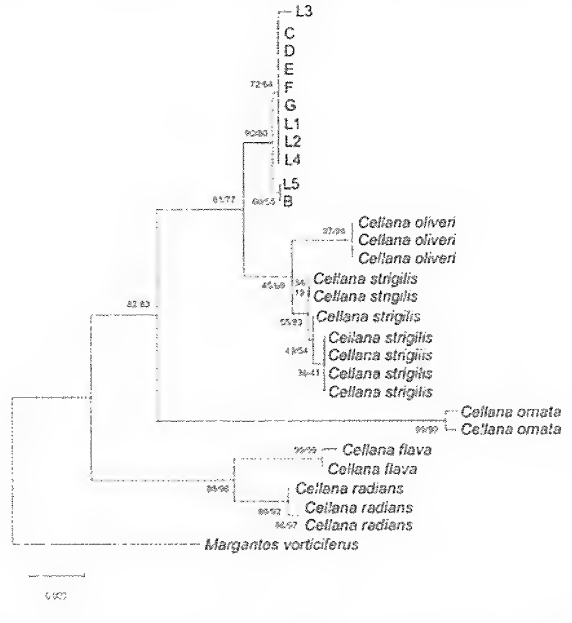


Figure 2: Neighbour joining and Minimum Evolution phylogenetic trees (node confidence values shown in that order) with congruent topologies showing possible relationships between *Cellana* species and populations. Samples D-G are *C. denticulata* from Wellington; samples L1-L5 are from Kaikoura and pre-date the 2016 earthquake.

Our phylogeny topologies differ from those published in Goldstien et al. (2009) and Reisser et al. (2011), but this is most likely an artifact of the comparatively short DNA fragment we sequenced. Short sequence lengths is a limitation of ancient DNA PCR-based approaches as the DNA shears over time. Our node values were fairly poorly supported, however, the intraspecific relationships in *C. denticulata* are probably well depicted due to the simple patterns of structure detected.

From our limited sequence length and sample sizes it is impossible to conclude how diverse each population is. As two of the three recovered haplotypes were shared between the two sampled populations, it is probable that sequencing post-2016 limpets using the same marker would not conclusively establish the source population of newly settled individuals.

Although we did not observe all of the contamination mitigating controls normal to ancient DNA research for the course of this exercise, this study adds further evidence to the growing ease and potential application of ancient DNA methods to invertebrate research questions where ethanol-preserved sample availability is a limiting factor, such as questions with a temporal component, as here, with the 2016 earthquake.

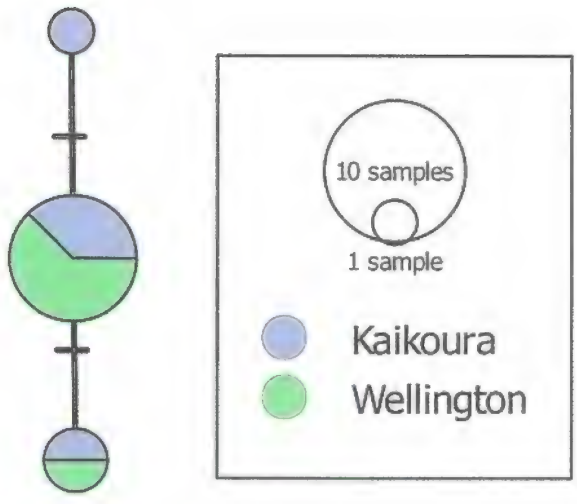


Figure 3: Haplotype network map. Each circle represents one possible DNA sequence from CytB. There is a single mutational step difference between the central haplotype and each of the other two.

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Living in Russell

by Jenny Raven

Travel restrictions due to Covid-19 this year have limited my travel to Russell. Most beach collecting was restricted to safe local beaches.

Bland Bay was still a popular choice for me. A very nice, large 48 mm *Rolandiella scotti* (B. A. Marshall & K. W. Burch, 2000) was found among the rocks at the end of the gravel beaches. Also in these pools were *Buccinulum linea* (Martyn, 1784) and *Buccinulum pallidum powelli* Ponder, 1971 exhibiting a variety of patterns. Some very nice, large, dark coloured *Nassarius spiratus* (A. Adams, 1852) were found in the sandy pools. All these shells were inhabited by hermit crabs. In the sandy bay south of the main beach I was surprised to find some large cracks in the sand and even more surprised to find a small *Tonna tankervillii* (Hanley, 1860) surfacing from beneath. In Australia, olives, cassids and bailer shells often surface from beneath the sand once the tide turns but this was the first time I had seen a Tonna specimen surfacing in New Zealand. I now look for sand cracks.

At the northern end of Long Beach, Russell, the hermit crabs had found some *N. spiratus*, a *Maurea osbornei* (Powell, 1926) and some *Rissoina zonata* Suter, 1909. It was good to see *R. zonata* again, the largest member of this family, after I last found a heap of them on nearby Motuarohia (Roberton) Island over 20 years ago.

Some very low tides occurred while I was at Russell, allowing me to note some fine, live *Cabestana spengleri* (Perry, 1811) out of the water on rocks – one was particularly fine at 130 mm and even then it had an immature lip. A local resident commented that they are a common shell in the area, which I would have to agree with. They may be found on a spring low tide, inside harbour entrances where it is a little more sheltered, on weed covered rocks, including at Kerikeri.

Top of page: Long Beach, Russell.
Above, left: *Rissoina zonata* Suter, 1909. Centre: *Buccinulum* spp. Right: *Cabestana spengleri* (Perry, 1811).
Go to 'NZ Collected Species' feature to see Jenny's *Rolandiella scotti* (B. A. Marshall & K. W. Burch, 2000) find.
Photos: Jenny Raven.

Koumac 2.3 2019 New Caledonia Expedition with the Natural History Museum, Paris

by Kerry Walton

New Caledonia is an interesting and beautiful part of the world. The marine fauna in the northern half of Grande Terre (the main island), where we were based, compares biogeographically with the neighboring Solomon Islands or northern Queensland, while southern parts of the island have faunal elements more in common with NSW, Norfolk Island and the Kermadecs. Although less popular with tourists, a result of having less infrastructure and fewer palm trees, the 'north' has a feel of its own. It is not 'just another tropical island'. Our indigenous Kanak hosts were welcoming and eager to discuss aspects of their culture and lifestyle, of which I was most interested, albeit constrained by my schoolboy French. With an independence referendum still fresh news, there were countless tricolour and Kanak flags lining the roads and much to talk about.

Our visit coincided with a particularly dry spell of weather. It rained just once in the approximately five weeks that I was there, and then, barely enough to wet the ground. Bushfires, most intentionally lit, raged throughout the dry north. It was the contemporaneous Australian fires, however, that gave us the apocalyptic sunsets every night, which were viewed most evenings with a can of locally brewed "Number 1" beer and lively discussion on the green flash. [Ed. note: The green flash is a meteorological optical phenomena that sometimes occurs briefly around the moment of sunset or sunrise.] The evenings were jovial and PB's (Philippe Bouchet's) daily 'announcement' was keenly anticipated. On the NO *Alis* (at 27 metres, the largest of the ten or so vessels we had at our disposal at various points on the expedition), at least during my short stays aboard, the chef was 'obstinately French' and his cuisine divine. In the downtime, I was introduced to belote, a card game deceptively similar to the English 500, yet with a scoring system so different as to give the impression that it was designed with the express purpose of embarrassing transitioning 500-players.

In 1993, Koumac, on the NW coast of Grande Terre was selected as the location for one of the earliest majo MNHN (French National Museum Natural History) marine biolitz expeditions. Just outside of the Cor Triangle, the biodiversity was extremely high, yet manageable. Th results of intense sampling across varying scales were published in 20 (Bouchet *et al.*) and revealed highe than expected biodiversity. 25 years later, and with many tricks learned, our mission was to see how things had changed, this time with an emphasis on live animal photograp and DNA preservation. Koumac 2. was about bulk sampling: dredging washings carried out intertidally an by dive teams, suction samplers deployed by dive teams, ARMs an the retrieval of lumen lumen (tangl nets. The team comprised 47 peopl of 15 nationalities.

I feel honoured and extremely grateful to have been invited to participate in the expedition by Pro Bouchet. As an early-career malacologist, it was an unparallele opportunity for me to see different sampling and sorting methodologi

in action, often at scales that we can only dream of locally. The size and duration of the expedition meant also that I could begin to get to know the participants much more so than under the time restrictions of a World Congress or other meeting. The names of many of the participants crop up again and again in our field. It was delightful to finally be able to match faces and personalities to these names. At least three collaborations have so far spawned for me from the expedition and I will be sure to use many of the methods I witnessed in future sampling. Special thanks to Virginie Héros and Philippe Maestrati, with whom I worked most closely at the sorting stations, as well as Hugh Morrison and Shayne Ahyong for some good ANZAC humour and company.

Above: Kerry doing some of the inside work.
Below: One of his collects.

[Ed. note: This article first appeared in the Malacological Society of Australasia's Newsletter no. 173, May 2020.]

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NEW ZEALAND SEASHELLS

by Wellington Shell Club members Jenny Raven & Selwyn Bracegirdle

A must for shell collectors, this book is an update on their earlier published book, with 200 additional photos and text.
In total it comprises 92 glossy pages, with colour photos, up to date text and names identifying over 1000 New Zealand marine shell species.
The cost for New Zealand shell club members is NZ$60 plus postage and packing.
There are limited numbers printed, so if you would like a copy, contact Jenny on ravenjay@xtra.co.nz or +64 21 1327786.

Notes on NZ Collected Species

Epitonium minorum

(Iredale, 1936)

These specimens were washed up alive at Waipu Cove, Bream Bay, Northland in January, 2020.

JAVIER COUPER

Oxynoe cf. *viridis*

(Pease, 1861)

Eastern side of Island Bay, Wellington, on 12 January 2020.

SARAH MILICICH

Lyncina vitellus (Linnaeus, 1758)

40-50 mm. At 7-8 m, Tokoroa Island, Houhora Harbour, Northland in February 2020, by SCUBA.

JAKSON STANCICH

Bullina lineata
(Gray, 1825)

Crawling on algae-covered rocks at 5 m, at Deep Water Cove, Bay of Islands, 22 March 2020.

LUKE COLMER

Theora lubrica
Gould, 1861

Sieved, alive, from mud at just below low tide at Algies Bay, Warkworth, in January, 2020.

JAVIER COUPER

Micromelo undatus
(Bruguière, 1792)

First record from mainland New Zealand (known from Kermadec Islands). At 7 m on a sand patch near Trevors Rocks, Poor Knights Islands, 23 November 2019.

STEPHEN HEMSTALK

Philine angasi
(Crosse, 1865)

From sand and zostera grass at low tide, at the entrance to Pauatahanui Inlet, Porirua. October 2019.

JAVIER COUPER

Heliacus sp.

10-12 mm. At 12 m, Tie Dye Arch, Poor Knights Islands. November 2019.

IRENE MIDDLETON

Isara carbonaria
(Swainson, 1822)

At Mt Maunganui, Bay of Plenty in July, 2014.

DAAN HOFFMANN

Pecten novaezelandiae
Reeve, 1852

Live in a touch tank at Goat Island Marine Reserve, January, 2019.

JAVIER COUPER

Monoplex parthenopeus
(Salis Marschlins, 1793)

Manukau Harbour at Cornwallis, West Auckland, on 14 February 2020.

JAVIER COUPER & KERRY WALTON

Scintilla stevensoni
Powell, 1932

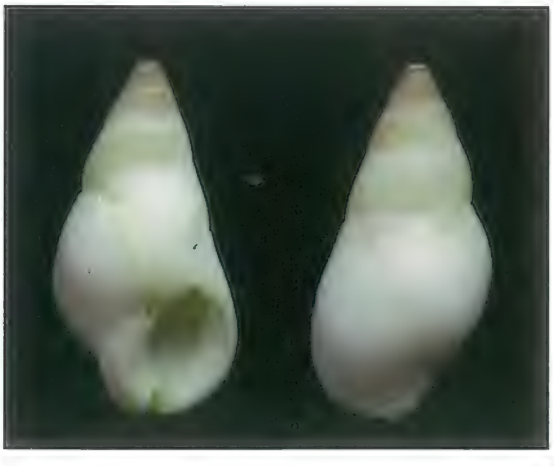
Under rock at Leigh, North Auckland on 9 May 2020.

SARYU MAE

Hinea brasiliana (Lamarck, 1822)

Left below, 14.8 mm from rock pool Pananehe Island, Spirits Bay, Northland, 4 January 2020. Right below, at Leigh, 8 March 2020.

SARYU MAE



Tugali elegans
Gray, 1843

Under a large rock just below low tide, at a reef at Algies Bay, Mahurangi Peninsula, North Auckland. January, 2020.

JAVIER COUPER

Austrofusus glans
(Röding, 1798)

In rock pools at low tide at Plimmerton Beach, Porirua.

JAVIER COUPER

Mesoginella cf. *koma*

Found living below low tide in sand in a sheltered gut at Waipu Cove, Bream Bay, Northland, in January, 2020.

JAVIER COUPER

Philinopsis taronga
(Allan, 1933)

Crawling through sand at about 1 m depth in the Matapouri Estuary, Matapouri Bay, Northland on 22 May 2020.

LUKE COLMER

Notocochlis gualtieriana

(Récluz, 1844)

Alive in less than 1 m of water, on sand in the Matapouri Estuary, Matapouri Bay, Northland on 22 May 2020.

LUKE COLMER

Rolandiella scotti

(B. A. Marshall & K. W. Burch, 2000)

48 mm. Found amongst the rocks at the end of the gravel beaches at Bland Bay, Northland.

JENNY RAVEN

Alcithoe arabica (Gmelin, 1791)

Length 175mm. Found at the outlet of the Okehu Stream, Whanganui, at the foot of the cliff on the SE (Kai Iwi) side. The top and spire of the shell was exposed from a wet clay/silt stone mix that was fairly easily removed to free the shell. When cleaning the shell I became reluctant to remove more of the clay mix, as I was concerned that I would damage the fossil. Marwick cites *Alcithoe transformis* as being found at the base of the lower Okehu siltstone but that species is a synonym of *A. arabica*.

ROD SUDLOW

Reference:
MARWICK, J. 1926. Tertiary and Recent Volutidae of New Zealand. Transactions of the New Zealand Institute 56: 259-303.

What's in a name – revisited

by Pat Lakeman

Occasionally I continue to notice shell names that take my fancy, so to speak – on which I have written for *Cookia* before. *Pseudocyclotus incendium* Clench, 1957 might just have been a hot item but its species etymology is amusingly explained as "A facetious name suggested by a fire which started at the time this species was being described. (The fire) destroyed one of Harvard's landmarks, the Memorial Hall clock tower." Presumably no molluscs or conchologists were harmed.

But one should not jump to conclusions. I could not find *Helicella tardyi* Bourguignat in Locard, 1882 in the World Register of Marine Species, although it appears in some other lists. It might just have been a late or sluggish specimen before it was synonymized with *Helicella itala* (Linnaeus, 1758) but given that Tardy is also a surname and an old French family name at that, more research would be needed to determine its etymology.

And let that be a lesson to me about what can be lost in translation. I came across *Helminthoglypta dupetithouarsii* (Deshayes, 1840). I had read that Deshayes had been at odds with his contemporary, Achille Valenciennes, who obtained a position Deshayes wanted at the French National Museum of Natura History - so perhaps there was someone called Dupeti that Deshay felt even more strongly about! But shame on me for wicked thoughts – there is of course a French family name "du Petit Thouars" (sometim hyphenated) in which occurs more than one esteemed naturalist worth of name recognition. This species v named after Abel Aubert du Petit Thouars, 1793 - 1864) who was a French naval officer important in France's annexation of French Polynesia, and a botanist.

The shell - and the man.

Above: Fine specimens of *Helminthoglypta dupetithouarsii* (Deshayes, 1840) from California, USA. Photo: https://www.inaturalist.org/photos/11076225 - copyright Tom Larson, 1998.

Right: A fine portrait of Abel Aubert du Petit Thouars. Photo: Wikipedia & http://www.stehelene.org/php/accueil.php?page=5&lang=en&npage=6&total=119 (Unknown author).

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The future of our collections

by Kerry Walton, Kevin Burch, Pete Cresswell, Eric Scott & Andrew Spurgeon

The subject of what, ultimately, to do with one's shell collection, is a topic infrequently broached and rife with misinformation, ulterior motives and awkwardness. Shell collections can represent an enormous devotion of time, money and energy, as well as being a source of great joy and pride. They have intrinsic personal value that is difficult to quantify. It is unfortunate when a collection meets an end unlikely to be in line with the wishes of its creator. Much bitterness has resulted from where various private collections have ended up in the past (sometimes, this is unavoidable). To whom you give the proverbial pie that is your shell collection is very much a personal choice. There are no right or wrong answers. You may have friends, family, fellow collectors, shell dealers, shell clubs and museums all vying for a slice.

In this article, we attempt an overview of some options and considerations relating to bequeathment of a shell collection. We attempt to mitigate our opinions and prejudices by avoiding naming individuals or institutions. We encourage you to broach this subject with your partner, family, other collectors, and scientists. We urge you to decide the future of your collection while you can. Just as importantly, you need to communicate this wish. That is not necessarily to say that you should inform the would-be recipient(s), as perhaps your preference will change. Instead, communicate it to your spouse, your next of kin, or put it in your will.

While it pays not to overly complicate a will, you can elaborate on what you would like to happen (or not happen) to your collection. Consider specifying a secondary destination for your collection, should your first choice be unable to meet your wishes or accept the collection, or should they only desire a subset of your collection. What's more, do not just specify the recipient, but why not also offer a few comments as to your philosophy – if not instructions, then guidelines – about how you would like the collection treated (or not treated as it may be).

Ascribing value to a shell collection is extremely difficult. The intrinsic (subjective) value is often far greater than the monetary value. The Wellington Shell Club can offer valuations, but be aware that any figure is, at best, a ballpark estimate and will generally be made by a fellow collector anyway. Scientists may be able to offer advice but are often hesitant to be complicit to sales agreements, which can look unprofessional. There is also the scientific value to consider. Even if you do not wish the collection to be sold, it can be useful to know its monetary and scientific value. Clear communication regarding value and wishes is best to reduce the risk of resentment from family or spouses. It is important too to understand how value is distributed within a collection. The term 'picking the eyes out' refers to how the removal of a very small proportion of a collection can greatly diminish its scientific and monetary value. This is true no matter how large or small a collection. The removal of a small number of specimens, knowingly selected, will truly gut a collection.

Often collections will be split up. A collection may be divided in many ways: local/foreign, marine/terrestrial, big stuff/micros, gastropods/bivalves, by family, to individual lots or specimens, to items your first choice of recipient wanted to keep/other items, et cetera. However, the scientific value of specimen lots comprising multiple specimens cannot be overstated and this is something that many collectors value too. Keep in mind that a collection split too finely ceases to exist as a collection, and where and how a collection is disseminated is your legacy. If you would prefer your collection not to be split up, be sure to communicate this. Most institutions and collectors would prefer to integrate a bequeathed collection into their own rather than to maintain the two as separate (in one place but split up). Consider your views on this, and if your recipient might oblige.

Many collectors like to 'keep it local' rather than to let stuff 'disappear' overseas – something to communicate if this is your preference. This view seems to be especially prevalent among New Zealand collectors, possibly resulting from the high numbers of local collectors who only or mostly collect New Zealand species, and the high rates of endemism in our local molluscs. A preference for a collection to remain local does not speak of negative views towards the global collecting community, but instead, a preference to encourage local collectors, institutions and future generations in

the hobby.

Where rare species or publications about the local fauna go overseas, it becomes harder for new members of the local community to come by them, and the scientific information those collections might have held may be lost. A researcher cannot be expected to contact every museum and private collection in the world when working on a region's fauna, after all. Also, where potentially unnamed species or forms go overseas, they may get described without the authors having viewed as much material as local authors would be expected to view. The legality of posting unnamed species depends on one's interpretation of 'nationally significant'.

The amount of writing for each category or their order (alphabetical) below is not meant to infer importance. A combination of the below categories is an option. Where collections are discussed, consider including shell books and papers as part of the collection. To conclude, there is more to this subject than there first appears. We strongly encourage you to form and act upon a reliably informed opinion as to how and where you would like your collection to live on.

Family Members

Many collections pass to family members, which can be a great way to preserve the legacy of a collector and collection. Were your family less committed to the hobby than yourself, it is advisable to emphasise the importance of labels, proper storage and so on. If labels are lost or disassociated from the specimens, the scientific and monetary value of the collection is greatly diminished.

Consider communicating where or to whom you might otherwise have willed your collection so that your family can honor that wish should their interest in the collection wane.

Often, relatives' interests are nostalgic rather than reflective of an interest in the hobby. Perhaps you would leave family members just a few impressive display shells, or those with a family connection (such as those named after, or discovered by, the collector), rather than the whole collection – something worth considering whatever you had in mind for the bulk of your collection. Often display pieces are not what collectors or institutions would have desired as strongly anyway.

Where a young family member will be taking receipt of your collection, consider keeping the most spectacular, delicate and important specimens aside until the person is older and less likely to lose or br those specimens – maybe noting somewhere which those specime are and requesting that that famil member's guardian keep those sa until they are older.

Fellow Collectors

When a collection is bequeathed sold another collector, you can o be confident of how well it will b cared for and treasured in the co years - especially if the collector question is a 'partner in crime', a were.

Institutions

An argument is often made that a collection donated to an institut bad for the collecting communit there are then fewer specimens i circulation between collectors. T argument is similar to that again sending rare shells overseas. The counterargument is that specime donated to an institution will be available to the local collecting community to access and view i centuries to come. Institutional collections help collectors to understand what can be found w how variable species can be, wh 'aim' for, and give us all someth appreciate. Collectors benefit fr the scientific knowledge such collections generate. Some speci are harder to get than others – th just a fact of the hobby. To remo specimens of rare species from private circulation would just m the eventual acquisition by a pri collector of specimens of those species more rewarding. You ca never have everything, after all.

Having specimens in an instituti can be a great legacy. Your nam be associated with those specim indefinitely, and they will be vie in the long run, by more collecto than most of those that remain i

Some collections are considerably grander than those we have at home! Pictured on this page is part of the invertebrate collection at the National Institute of Water & Atmospheric Research; on the facing page, specimens at the National Museum of New Zealand, Te Papa Tongarewa.

private circulation, where they are at greater risk of being discarded, broken or disassociated from their data or the rest of the collection. Often when discussing the donation or sale of a collection to an institution, people fear that much of their beloved collection will be discarded. Some collectors recount horror stories of this happening (based on varying degrees of truth) to discourage others from willing their collections to an institution – sometimes, we dare suggest, with ulterior motives.

Museums are offered shell collections frequently but can only accept a handful of these. Many small museums do not have the space, money, or expertise to accept a major private shell collection and properly curate it. In terms of raw materials (archival quality glass tubes, jars, carboard boxes, labels, sometimes preservatives, and cabinets), you are looking at least five dollars per lot. A large private collection can comprise more than 20,000 lots. Then, staff costs must be factored in. Someone needs to register the lots and check the identifications to fully integrate these into the institution's collection. How long this takes depends on the proficiency of the worker, the institution's priorities, if they have access to mollusc experts and literature, and how the collection was presented in the first place. Even getting the collection to the institution can require a lot of man-hours and incur significant transport costs.

An institution will have to carefully evaluate if the collection or parts thereof are worth the investment it takes to accept them. Once accepted (and databased), it should be near impossible for anything to be discarded, so the 'triage' (if you like) process must be robust. There are only so many poorly localized lots of common Indo-Pacific species (e.g., tiger cowries) each New Zealand institution needs before you start wasting taxpayer resources by adding to and caring for those, no matter how loved they were by their previous owners.

Museums can buy collections or specimens, so an interest to recoup some money out of your collection ought not rule out an institutional home. However, how much an institution can spend on a collection will vary significantly. Since 2018, for the first time in over 100 years, no museum in New Zealand presently employs a New Zealand mollusc expert. While several current museum staff have decent mollusc knowledge, they may still have to seek advice externally to associates or former staff as to what collections are worth and how significant they are in light of what is already available in New Zealand institutions collectively.

Many institutions have volunteers from the shell collecting community. Generally speaking, volunteers are well supervised and an asset, partially compensating for the aforementioned deficit in mollusc expertise. However, having collectors handling unregistered material presents a security risk, especially where there is no malacologist on the staff to supervise them. If you will your collection to an institution, it is reasonable to expect that all your collection will end up there, or at least, for a knowledgeable staff member to decide what to keep, rather than for important specimens to re-appear elsewhere within the collecting community. We do not suggest we are aware of any dishonesty happening at present. Instead, we simply encourage the shell community to be vigilant now and in the future.

There are several institutions to choose from. Don't hesitate to leave specific instructions or discuss concerns with a staff member or associate if you are considering an institutional future home for your collection. We encourage you to reach out to institution staff or associates to discuss topics raised in this article. Consider naming someone to advocate for your collection in case the acquisition process is drawn-out or should the institution management not show interest, in which case the advocate can exercise their judgement for the collection based on your wishes or instructions. Keep in mind that some associates (hopefully not staff members!) will have collections and motivations of their own too.

Remember, once donated, a collection is no longer yours. It may seem silly to say, but many collectors or families feel an ongoing sense of ownership of museum material. Museums encourage community connection to their treasures and the institution

itself, and generally collectors and their families can arrange access to view specimens from the collections. However, once a collection is in a museum, it is the museum's property. Your family probably won't get it back later if minds are changed!

Even a comparatively small collection can have substantial scientific value. This is especially true if the collector kept good locality information, collected micro-molluscs and/or visited, or lived in, less frequented regions. Scientific value comes in knowing the past and present distribution of species and variation therein. Even a poor specimen of a common species can be valuable as a locality record. Abnormal specimens are potentially important. Multi-specimen lots have much greater scientific value than singletons for many reasons. So few collectors retain micro-molluscs that most collections with micros will contain useful new records or specimens of species otherwise poorly represented in institutional collections. Almost all collections have a few rare things that would be very useful in reference collections.

Consider offering an institution the chance to take what it wants and then specifying a secondary destination for the remainder. The reality is that for many collections, an institution will not want most of the more common species or more damaged specimens unless the collector has been particularly noteworthy to the local malacological scene. That even a major collection might be rejected is something many collectors will not have considered, but this is a sad reality of museums in the 21st century, especially small institutions. Museum budgets have been generally diminishing and there are fewer people who might advocate for institutional retention of such material.

There is growing pressure to have evidence of collecting permits and indigenous consultation associated with every specimen lot where possible – such documents are not required by law or the morality of private collectors today. Potentially, institutions will grow increasingly hesitant to accept legally amassed private collections for these reasons in the future. The Nagoya Protocol, of which New Zealand is a rare non-signatory for now, is an international agreement relating to collecting ethics and indigenous rights when it comes to natural history collections. While it has good intentions, it creates increased bureaucracy and paperwork when it comes to loaning specimens overseas for research, gene sequencing and the like. Unpermitted specimens are sometimes unusable for research. Ironically, New Zealand's Ministry for Primary Industries (MPI) sometimes gives to museums what it confiscates at the border – arguably the least ethically sourced material possible! As institutions re-evaluate ethical best-practices, historic and private collections are constantly being viewed from different perspectives.

A collection given to an institution without a strength in that area (i.e., molluscs) will not get seen as often by researchers or, probably, collectors. While there is something to be said about not putting all of your 'eggs' in the same basket, spreading collections too thinly across New Zealand's many different institutions will result in not all of the institutions being visited by researchers or collectors, who will prioritise larger collections to cheaply and easily see lots of material. Larger collections are generally better curated, funded and have more robust legal obligations when it comes to the care, security, disposal of items. Note while we sometimes use the term 'museums', some universities and Crown Research Institutes in New Zealand also house natural history collectior

Shell Clubs

New Zealand currently has three active shell clubs, based in Whangarei, Auckland and Wellington. To varying degrees, th following comments refer to all thr clubs, but are explicitly stated for t Wellington Shell Club (WSC) hereafter. The WSC can provide advice on, and a means of selling, most collections, should that be yo preference. Note the WSC has members throughout the country a well as overseas and does not just 'serve' the Wellington region. The WSC gratefully receives and occasionally purchases collections the club maintains a stock of shell for raffle prizes and sales tables at meetings. In this way, specimens re-circulate throughout the local collecting community, often to members who would not otherwis have been able to find or afford equivalent specimens.

Sale

Many collections end up being s and collections can be worth significant amounts of money. O collectors or their families have wildly inaccurate ideas of the va collections, so it can be worth as other collectors for their ideas or value. The means of sale, and tir put in, will greatly influence pric realised. Selling an entire collec in one go will not reach the sam as the sum of selling off its parts longer you wait, and the wider y audience, the more the shells wi for. A sale in large lots will requ far less effort to prepare and shi

will return less than if the collection is split more finely. Condition scales exponentially with price. Where the collector or their families find themselves short of cash, selling a collection can be an attractive option.

Whatever you had in mind for your collection, your family is likely to receive unsolicited offers in the event of your passing. If they are grieving and/or unaware of your wishes for the collection, or its value, it may sell too cheaply or not pass to where you would have liked. The first to offer a price will probably not be a collector's closest friends.

The presence and quality of labels greatly influences shell values. Any suggestion of false data will see reputable collectors avoid those shells. Fabricating data (even honest guesses) to 'improve' label detail is strongly discouraged. Already the large amount of dubiously labelled specimens in private collections makes it very difficult to know which collections and specimens are worth considering for their scientific value.

Local auctions are one of the better ways to disseminate material with minimal effort (e.g., postage or paperwork). International auction sites may yield greater return for larger and more well-known species, but generally these sites require specimens to be sold individually and require international money transfers and shipping. Potentially, regular sellers would be prepared to sell on your behalf, for a commission.

Consider selling just the most valuable few species - the Zoilas, royanums and gloriamaris', for example. Because monetary value is not distributed evenly within a collection, you could retrieve a reasonable sum for comparatively little effort from just a small proportion of the collection, without necessarily compromising it as a whole unit. Indicating these shells to family could be wise. This will also reveal to your family if a friend helping to sort or pack the collection and asking for a small number of shells as a memento is being reasonable.

The legality of selling a collection (or shells in general) is a surprising grey area, given how frequently it occurs. As such, we do not mean to advocate for or against selling shells. The Fisheries Act requires one to be registered to sell fisheries product. The MPI has intervened in the recent attempted sale of at least one collection in the last two years, citing this law. As that clause was not written with the shell trade in mind, and laws are meant to be interpreted considering their intention, we wonder how a legal challenge would stand up in court. There is ample precedent of the selling of shells and collections within the local collecting community (legally or otherwise), and we see little ethical difference between such actions and the equivalent of similar special interest communities, such as those that think stamps are a pretty neat idea.

Many collections contain specimens of species listed in New Zealand's Wildlife Act. The sale or possession, without a permit, of these is illegal, regardless of when they were collected (see Walton 2016). Last year, the Department of Conservation intervened when protected snails were offered for sale in the Auckland Shell Club auction. Many collectors also have material illegally sourced as by-catch from commercial fishing vessels. Where the vessel or crew are named on labels, keep in mind that the penalties can seem disproportionate (e.g., the seizure of multi-million-dollar vessels, quota and loss of jobs) and are felt more by the fishers than the collector. Should you have illegally sourced material, the relevant government agencies are unlikely to be very interested as, for the most part, shell collectors are not harming protected species or promoting changes in bottom trawling. However, consider carefully what material might be sensitive and how you treat it to avoid embarrassment or fines. Note also that the removal of fossils from New Zealand is probably illegal under the Protected Objects Act 1975 (formerly known as the Antiquities Act).

Something to aspire to? Part of the collection in the Department of Invertebrate Zoology at the Smithsonian Institution's National Museum of Natural History.
Photo: https://petapixel.com/2016/04/08/ & Chip Clark/Smithsonian.

Reference:
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Termites of the Sea - *Bankia australis* (Calman, 1920)

by Bert van Tiggele

Classification of *Bankia australis*:
Mollusca (Phylum) Bivalvia (Class) Myida (Order) Pholadoidea (Superfamily) Teredinidae (Family) *Bankia* (G
Bankia australis (Species)

Marahau is a small village about 20 km north of Motueka in the South Island of New Zealand and for many tourists it is the southern entrance for visiting the Abel Tasman National Park. In March 2020 I was at Marahau beach. Between the rocks at the seaside, I found a tree trunk of about a metre long, full of boreholes. The wood was sodden with water. I removed a piece about 10 square centimetres in size, took it home, and dried it. Twenty shells of the invasive shipworm *Bankia australis*, (Calman, 1920), came out, some with their pallets!

Representatives of four families of the Order Myida - Corbulidae, Pholadidae, Teredinidae and Xylophagidae – can be found in New Zealand. Within Teredinidae, *Bankia* and four other genera occur here. *Bankia* is by far the most encountered and *B. australis* can be found throughout the North Island and the north of the South Island. We also have other species which bore into substrates of rock, mudstone and wood.

Shipworms like *Bankia* species have an elongated worm-like body, with two shell valves and a cephalic hood at the anterior end. The siphons and pallets are at the posterior end. Not all of the soft body and vital organs are enclosed by the shell valves as is in a typical bivalve, but the entire body is well protected within a wooden burrow. The tunnel interior is coated with a calcareous substance secreted by the organism itself (Calman, 1919).

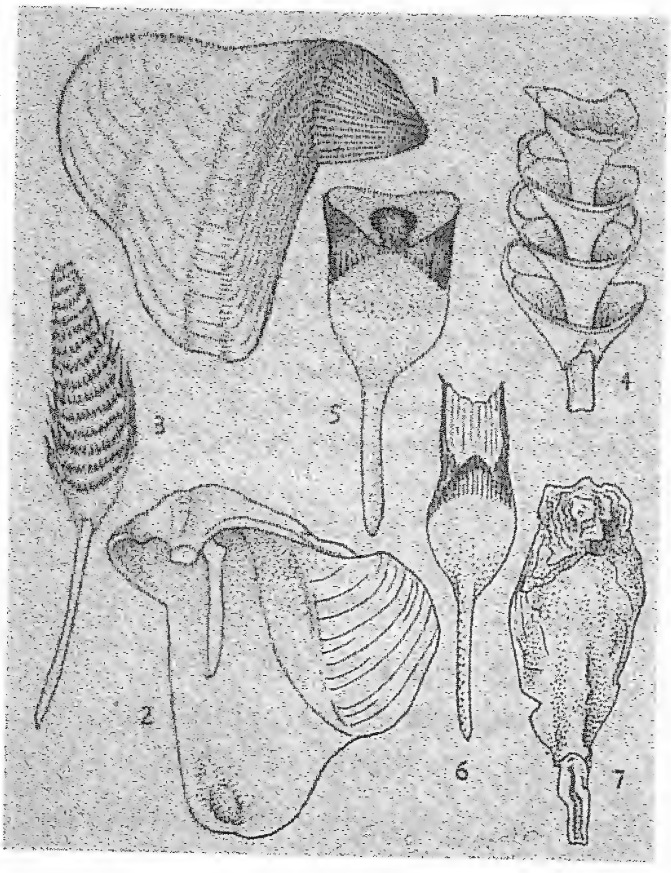

Fig. 114 from Powell (1979). 1-3, *Bankia australis* (Calman, 1920) shell, 13.5 mm and pallet.

The construction of the tunnel is started by the larvae when first encountering wood. At this stage, it looks like a minuscule mound with two pinhead-size holes for the siphons to protrude on the wood surface. This has the function protecting the larvae, while di the tunnel into the wood, leav space for the few hours-old si to wave in the water and perfc their basic living activities.

In the second stage, as the shi grows, it enlarges the burrow. well protected borer in wood has connection t exterior world only thr the siphons waving in water. When these are attacked by a predator, borer can withdraw the siphons and plug the e hole with a pair of calc organs called pallets.

The development of th pallets has reached gre specialisation in *Banki* segments of pallets are separated as individual like elements "threaded stalk." In dried specime segments can be remov beads from a string. In *Bankia*, the cones have become highly specializ closing the entrance to t burrow in an effective ma The edges are usually ser and long lateral awns are often present. These allow the two pa to interlock when brought togetl with the flexible periostracum, s greater the external pressure, th the cones expand and the tighter

are pressed against the side of the tube. The variations in the pallets are remarkable and almost all species can be identified from their pallets (Turner, 1966, 1971).

Shipworms are invasive but can only invade new wood during their short larval period when they are free swimming. The initial entrance hole is extremely small and normally is only slightly enlarged throughout the life of the animal. Consequently, the damage which they do often goes undetected until the interior is nearly or completely destroyed, and the wood disintegrates. It is for this reason they are often referred to as "termites of the sea!

For centuries shipworms were a big problem for wooden sailing ships, and in recent times they caused the collapse of a rail bridge spanning the Nūhaka River, on the East Coast, in 2005, by burrowing into the supporting timbers below the waterline!

They are well-hidden and remarkable shells!

[Ed. note: In checking Bert's references for this story, it delighted me to see that marine borers are also known as shipworms, pillbugs and gribbles …]

Left: *Bankia australis (Calman, 1920)* live specimen. Above right, top: *B. australis* shell. Photos: http://www.roboastra.com/Mollusc6/hppr1188.htm - copyright Denis Riek 2013. Above right, centre & bottom: *B. australis* pallets, in situ and dried. Photos: Bert van Tiggele.

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What we did ...

It wouldn't be a 2020 issue if we didn't mention the Covid-19 pandemic – a time when much of the planet found itsel 'confined to barracks' in varying degrees. A time when, for those of us not working in essential services, we could so out our shell collections, write stories for *Cookia*, weed our gardens, clean our pantries and ready the pigs for flight. C if not, prepare for the guilt which would descend upon us if we hadn't!

In common with almost everyone, shell club members, and shell club activities, were affected in various ways. As the March club meeting was cancelled on the eve of the national lockdown beginning 11.59pm on 25 March, Judy Hardie and Pat Lakeman had postponed overseas travel scheduled for March and beyond. Kathy and Les Carson had set off from Christchurch in their campervan on 13 March headed for the north of the North Island. A week later they decide to turn back, reaching Whakatane on 22 March and making it home just in time.

Heather Smith had planned travel and prepared displays for the Australian National Shell Show, which was to have b held in Brisbane in April, but it was cancelled. On a more positive note the Sydney Shell Club was to be congratulate for sending out the next Australian National Shell Show programme, to be held in Sydney in February, 2021 – we hoj (At time of writing, international borders remain largely closed.)

Here follow some narratives of what some of us got up to – Jill starts with a retrospective (the story she had planned t write) that morphs into a tale of present history in the making; Roger reports on getting back to 'normal'; a few of us actually play with our shells and shellrooms; and our Kaikoura correspondent relates a few pre-Covid summer adventures, plus a far more dramatic start to lockdown than anyone would wish for!

Going viral

by Jill Burnet

This is not what I set out to write.

I had thought that, 2020 being such a nice round number, it would be a good year to indulge in a bit of nostalgia – an appropriate time to look back to the good old days and compare the club then with the club now. This raised the question of how far back the good old days should be. So I flicked through some of the club's old records, and came across minutes of a meeting at which David Cowe gave a talk about fossils of the Wairarapa. Fresh in my mind were happy memories of a recent meeting at David Cowe's home in Greytown where he showed us his extensive collection of Wairarapa fossils and many other treasures. Problem solved. Such serendipity could not be overlooked. That earlier meeting was in 1960, 60 years ago. More round numbers.

What was the club like in 1960? The year 1960 was a bit of a challenge for the club. In 1959, Dick Dell had advised the members that he would be away for a year in England on a Nuffield Travelling Fellowship. Since its beginning in 1955, the club had very much relied on Dr Dell, who at almost every meeting had either conducted a study group or given a talk or both. He arranged for the club to continue to have the use of the room at The Dominion Museum in Buckle St while he was away, but apart from that it was up to the club members to organize the meetings, which they did. The study groups were abandoned until Dick Dell's return. Dr Yaldwin gave a talk, we visited Geological Survey, there were a couple of members' evenings, and Mr Paul, Mrs Duguid, Mr Beu, Mr Ponder as well as Mr Cowe were among the year's speakers.

Many members will remember meeting Alan Beu and Winston Ponder at the club's 60th anniversa in 2015. Another name from the pa which is still on our contact list is Doreen Burr. Only it was as Miss Brady that she was among the members listening to David Cowe talk in 1960. Names were a lot mo formal then, and it wasn't just the names – the whole style of meetin with members sitting in rows facir the president and secretary.

Numbers at the meetings were mu the same as now, anything from 6 15 or more on a good day. What is very different is the total members of the club – in 1960 it had grown two dozen people, from a start of

eight. Now we have over 70 members living from Northland to Bluff, and even in Australia and USA. In May 1960, it was the club's fifth anniversary, and this was celebrated with an extra good supper after the meeting – nearly all the meetings, for many years were held in the evening, on the fourth Thursday of the month. Even the AGM was a normal Thursday evening meeting with the addition of an annual report. We celebrate AGMs and other special occasions a lot better now – more food and drink, more shells, lots of socializing. And for many years, the AGM has been the time when we hand out the new issue of our wonderful magazine *Cookia*. Back in 1960 we weren't producing *Cookia*, but we had started its forerunner, the Circulars. This was just a foolscap, stencilled page, but a start had been made in compiling lists of shells found in various parts of the Wellington Region. There was an attempt to have a field trip in 1960, but it had to be postponed on account of the weather. Nothing changes there.

Well that is the sort of thing I planned to write, back at the end of 2019 when I saw the minutes of that meeting with David Cowe's talk. I thought 2020 would be just another year, going on much as usual. How wrong I was. So much for 2020 vision.

By the beginning of this far from ordinary year, we had heard reports of a new virus spreading through China, where it was proving a very nasty disease as humans had no immunity to it. That was in China, and here in Wellington we happily went on planning our shell club meetings as usual. Kind people offered the use of their homes: Jenny Raven in January, Pat Lakeman in February, when we were delighted to see Kerry Walton up from Dunedin and hear about his experiences. The coronavirus crept closer, but at the beginning of March I blithely sent out the newsletter advising of the meeting at Mary Agnes Wotton's place at the end of the month, giving details of an outing to Plimmerton in April. Judy Hardie had said that she was going to Toronto and Cuba, Pat Lakeman was heading to Australia to visit her brother, and I was packing my bags to go up to Ngaio to enter into servitude with Sophie and Sable.

Then suddenly, the virus was here, and we were going into lockdown. We raced through alert levels 2 and 3 in a few days, and those days were really crazy – everything you wanted to do for a month had to be done then. Those shops that were open were doing frantic business. Everyone was buying for a siege; shelves were swept bare. I remember seeing youngsters staggering out of The Warehouse, their arms full of boxed chocolate Easter eggs. The next day we woke up to lockdown. It was so quiet – no traffic, no planes, no air pollution. We were all confined to our homes, except for those working in essential services. The people we lived with were out 'bubble' – the only people we could be close to. We had to keep two metres away from everyone else. We were allowed to go out for walks in our own neighbourhood, and we were allowed to shop for food. Shopping was a whole new procedure, queuing at the door, two metres away from the person in front and the person behind, hand sanitizer to use when you did get in, only one person per household allowed to shop – every shop had its limit of the number of people allowed in at a time. The counters were wiped down between customers and the staff were behind Perspex screens. And some items were in short supply. Flour was either rationed or not available right through lockdown. Baked beans, toilet paper, hand sanitizer, were all hard to get at times. Banks were open only one morning per week, and the queues outside them were even longer than the supermarket queues.

Luckily, it was sunny most of the time – we had the most amazing run of fine weather. I saw far more people walking their dogs than usual; I saw my neighbours out with their children. We all waved and shouted to each other across the street. Buses were on a Sunday timetable and were free. Very few people used them so I found it no problem to practise 'social distancing'. We all listened to the radio or tv. Every day there was an update – how many new cases of the virus, how many deaths. The Prime Minister and the Director General of Health spoke very regularly and there

were interviews with all sorts of other specialists on every aspect of the virus and its progress, not to mention constant reminders to wash your hands and practise social distancing. Normal life was on hold.

I did a lot of reading, made myself go out to the garden and cut back ivy or elder every fine day, and had a jigsaw puzzle on the go. Pat Lakeman couldn't go to Australia or England, Judy Hardie couldn't go to Toronto or Cuba and Alison Rusbridge missed out on a trip to Europe. There were no shell club meetings, and no outing to Plimmerton. There was no point in trying to plan anything, or to think further ahead than the next day or two, or the next shopping trip. When we went to level 3 after Anzac weekend, I didn't notice much difference. The postshops opened, but none of the other stores that I would have liked, such as Bunnings. There were more delivery vehicles on the road as more people shopped online. When MacDonalds and Kentucky Fried Chicken opened their drive-thru sales, everyone went mad and decided they couldn't survive one more day without getting a takeaway meal. I had walked over the hill and down into Kilbirnie,and saw what I thought was a really bad traffic jam at the intersection. As I walked around the corner, I saw it was the queue for the drive-thru KFC at the end of the block, and even more cars were turning up and being sent to do laps around the block.

Level 2 didn't last long – by then people were being a bit more casual about social distancing. Work started again on building sites and road works, there were more people out and about. We did discuss the possibility of holding our May meeting but decided it would be too difficult to comply with all the restrictions – it would have been the club's 65th anniversary. Everyone was counting the number of days without new cases of coronavirus, and when the Prime Minister made one of her key announcements early in June, it was generally expected that she would announce level 1, it was just a matter of when, with predictions of everything from 2 days to a week. But she surprised us, level 1 started at midnight that day and, at time of writing, that is our new normal.

We are still supposed to be washing our hands carefully and keeping a record of everywhere we go, and everyone we come into contact with. And as I write, the borders are still closed, with 14 days isolation for those coming into the country. But we are back to planning shell club meetings again, as Roger Woods reports below – and it was good to enjoy a lot of talking and laughing with people we hadn't seen for so long. We are being very positive, assuming we will have our usual meetings for the rest of the year and looking forward to catching up with

A happy crew at our club meeting in July 2020 at the home of Kris and Roger Woods. Photo: Roger Woods.

members who couldn't come July meeting. Our venue is b for the AGM in November. (years since 1960, this has de into a great social occasion, b in members from outside We to enjoy with us an afternoon evening of looking at shells, about shells, a great pot luck an extra good raffle. It's the h of our year.

2020 has been an extraordina for everyone on the planet. W members in USA where, at th that I am writing this, the viru spreading. In New Zealand w been able, to a large extent, to our day to day lives, after an interruption of a few months. club is planning its normal me and activities, we are welcomi members and picking up the th with old ones. I feel that we ar lucky to have Wellington Shel it's a great place to meet and r friends who share one's intere shells. I used to correspond wi of our past members, Eric Edn who used to mentior isolated he felt living Maunganui. It wasn' information about sh missed, he seemed v well informed about shells he collected – the interaction with c collectors. It was wh had again in July, as stood round in Kris a Roger's kitchen, cofi hand, talking about everything from bird books, cats, choirs, k – and even shells.

Club meetings resume after hiatus

by Roger Woods

At long last Saturday 25 July saw regular meetings of the Wellington Shell Club resume after a five- month hiatus due to the Covid-19 lockdown. Although during June there had been an informal club outing to the Zealandia Ecosanctuary in Karori attended by a handful of members, this was the first meeting after the relaxing of social distancing restrictions.

The meeting was well attended with 12 members present. It was held at the home of Kris and Roger Woods in Johnsonville. The meeting topic was shells of the Indian Ocean with lovely displays of shells including some from Pat Lakeman and Kris Woods.

As usual several members also brought along some of their recent shell finds to show everyone. Fred Keil also showed his recently acquired shell-themed stamps from Afghanistan.

Jenny & Selwyn look pleased the hard work is over and their book is launched. Photo: Roger Woods.

Immediately following afternoon tea the hosts presented a slide show of their January trip to Sri Lanka including many pictures of birds and other wildlife they had seen. The meeting highlight was when Jenny Raven and Selwyn Bracegirdle revealed their much awaited publication "New Zealand Seashells". This book is a follow up to the much loved and utilized "New Zealand Seashells Visual Guide". The new book proved popular with several members purchasing copies which were made available for sale after the meeting.

[Ed. note: see details of how to buy the book elsewhere in this issue.]

Playing with shells and shellrooms

During lockdown, many of us will have cleaned shells and tidied our collections. Anyone who has seen even part of the impressive and extensive shell collection belonging to Kevin and Judy Burch will know that it almost needs a home of its own. And it almost has one! But for quite a long period recently it had to share its space – as Judy reports: "We had family staying for 18 months. Four days prior to lockdown they moved into their brand new home. Kevin then had all lockdown to potter. What a great burchorum man cave! When all goes quiet, I know exactly where he is hiding." The photographs bear witness to the sort of shell cave we can all envy - art, music, books, television, a microscope, a computer, and shells galore!

Cutting it fine

by Bev Elliott

So our editor has emerged from lockdown, and wants to know what we've all been up to. For me, writing articles for *Cookia* has NOT been on the agenda, what with the lockdown itself, plus the "shellfish" ban for the entire east coast of Marlborough, which looks like it is going on forever …though nobody has tried to stop me picking up dead shells from the beaches. I wonder how far one can digress from the topic of shells, and still write something acceptable for a shell publication?

Back in summer I had a short trip south, and at Ashley River mouth – my favourite place for birds. There I spotted a cute little wrybill, and a sanderling, the only one I have ever seen but I couldn't get a good photo of it.

My cousin Gary and I had a day trip to Le Bons Bay on Banks Peninsula, mostly centred on family history. Away at the end of a road through the bush, where our great grandfather used to live away back in the 1800s, is an antique shop. An extremely out-of-the-way place for a shop of any sort, but Gary knew it was there, and he wanted to browse. Antiques are not really my thing, but after I'd had a look around outside, and photographed a lovely pair of keruru that landed on the verandah, I went back in and spotted a basket of shells, including a Murex species that I couldn't recall ever seeing before. How much? $10. At my time of life, when I'm more interested in giving away some of my shells than in acquiring more, I don't know why I felt so attracted to that one. But I bought it, and later identified it as *Siratus beauii* (P. Fischer & Bernardi, 1857), and I think it was a bargain. [Ed. note: We think it is *Siratus alabaster* (Reeve, 1845) Bev, but it is still a great buy.] The background of the photo I have taken of it is an aerial photo of Banks Peninsula. The sandy beach to the left is Hickory Bay, and the long inlet on the right is Le Bons Bay. Back in the early 1900s, the Gracia children from Hickory Bay and the Elliott children from Le Bons Bay used to ride over the hills between them to visit each other, and eventually 4 Gracias married 4 Elliotts!

I had hoped to spend a bit of time on Le Bons Bay beach and make a brief checklist of shell species. The largest treasure on the beach was certainly worth seeing and photographing – a most enormous male sea lion, who was getting a bit tired of too many visitors, and took off down to the sea. Gary was getting tired too, and not being a shell collector himself, had no interest in my checklist, or even ir walking up the inlet to the old Elli homestead, which is still there (an renovated) a hundred years later. I Bons is a good place for *Ardeamy spenceri* (Suter, 1907), but I didn' have time for further collecting on this trip.

Bev's 'antique' *Siratus* sp., against an aerial view of Banks Peninsula. Photo: Bev Elliott.

I went off inland for a few days, b there's almost nowhere left where you're still allowed to go, of all th back country I used to freely explo Also the windy weather was atrocious. I almost managed to cli a mountain. Foggy Peak (1741 m) starting from the top of Porters Pa (942 m) on the main road west, pu you straight into a botanical parad of alpine flowers, The best plant I found was a Black Daisy, *Cotula atrata*, with 20 flowers on it! Old is catching up on me and I don't know whether I'd have made it to summit. I stopped for a rest, and noticed sou'west clouds thickenin around nearby mountains. *Get out here, Bev!* I went down mountain a lot quicker t I went up it, easily beati the coming bad weather By the time I'd had a m and a rest at Springfield, was raining steadily, an was very glad to not be a peak which would hav been a great deal more t "foggy" by that time!

Back home to Kaikoura. few highlights during th next few weeks: many b seals were born around t Kaikoura Peninsula; a yellow-eye penguin moulted, and I took lots o photos of it. The tramping group h

a canoeing trip on Lake Rotorua, with close views of nesting pied shags, and I saw nine crested grebes. A pair of black oystercatchers reared two chicks that I was able to photograph. Sally and Rob Peter from Cape Campbell came to visit me – they want to open a Cape Campbell Museum at Ward. I have got a collection of Marfells Beach and Cape Campbell shells, over 200 species, that they can have for it. Despite all the excitement over that, anything at all that anyone wants to do these days is going to be tied up in never-ending rules and regulations that will take forever to get unravelled. As much as I approve of their plan, I don't think much of their chances of it ever coming to pass.

And then came lockdown. March 24 was to be a very special day. My friend Glenis was coming to Auckland to visit me. When we were 11 years old, we were standard 5 at a tiny back-country school on Great Barrier Island – just the two of us. When we were 12 years old we were standard 6. When we were 13 and had left primary school, we seldom saw each other again, and then she moved to Auckland and we lost touch. About 65 years later we made contact again, and 24 March was the BIG DAY when we were going to make contact in person. Lockdown put paid to that! Soo what would I do instead? I'll gather firewood and cut it up. Never a thought that anything could go wrong; I've been using that circular saw for about 40 years, and never had a scratch from it. This time, all of a sudden it wasn't firewood I was cutting, it was FINGER! Followed by a flurry of activity, and I was at Kaikoura Hospital surrounded by six doctors! Another flurry, and I was in the rescue helicopter heading for Christchurch.

20 years ago I walked that entire coastline from Kaikoura to Christchurch … what an amazing chance to see it from the air. I knew just where I was all the time, and what would be coming up next. My injury had been completely numbed off, so there was no pain, and I could enjoy the flight to the full, and the medical man sitting next to me was enjoying my interest and excitement too. The crowning moment was flying over Ashley River mouth. Somewhere down there was my little wrybill, and the rare little sanderling which had stayed for many months. If only I'd had my camera … but I had nothing at all with me except the grubby work clothes I was wearing, and I had left my house open, and was still expecting to be back home that evening, or tomorrow at the very latest. Four days later, I beat level 4 lockdown by just a few hours. If I had known that "where you are Friday midnight is where you stay for the next month", I'd have been traumatized, but I didn't know that until I was safely on my way home. There was very nearly no way back to Kaikoura as we teetered on the verge of level 4, but at the last moment a medical lady from Kaikoura drove all the way down to Christchurch to get me. I was never so glad to be home! They took very good care of me in Ward 20, but I was finding the boredom of it very hard to take.

There was plenty of time to rest during lockdown and just let my wound heal. Over three months later it has all healed on the outside, but there's still a long way to go inside. It is still fairly stiff; it was cut right to the bone, it was 6 cm long, and right across the knuckle – and the tip is still very tender. A team of lovely ladies did my shopping during lockdown. I was able to go walking nearly every day. I've had three loads of firewood (already cut up!) brought to me. So I am very lucky indeed!

Top: Wrybill at Ashley River Mouth. Below: Baby seal at Kaikoura. Photos: Bev Elliott.

Editor's choice

The Scallop
by Maggi Hambling

on Aldeburgh Beach, Suffolk, England

Photo: https://commons.wikimedia.org/ Copyright Andrew Dunn, 1 November 2005.

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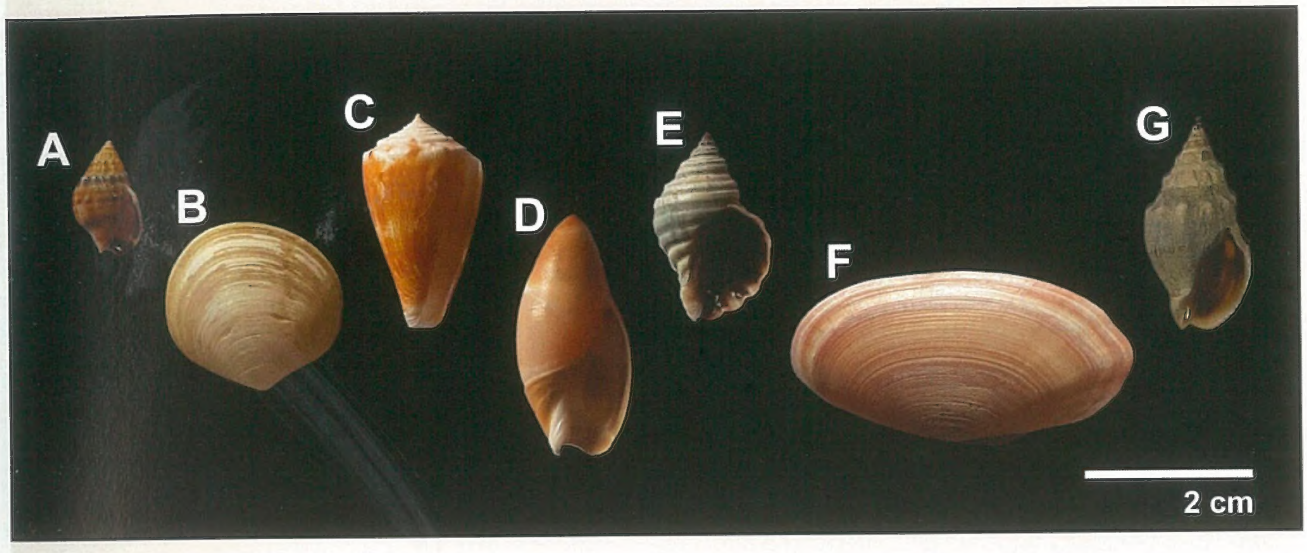
About *Cookia*

Cookia is the journal of the Wellington Shell Club and is published annually. *Cookia* was first published in 1976; pri to that date Wellington Shell Club published a Circular (1956-1965) and then a Bulletin (1967-1975) as well as occasional Study Notes on families of molluscs. For information on earlier publications see the Club's website: www.wellingtonshellclub.org.nz. To request back copies or copies of articles please contact Jill Burnett, 84 Brougha Street, Mt Victoria, Wellington 6011.

Your editors strive to attain a high quality of publication and careful fact-checking. The scope of articles is intended t reflect the differing specialties, levels of interest and experience within the Club: we hope all members will be able tc contribute should they wish. We welcome both scientific and non-scientific articles, opinion pieces, photos, drawings and poems, and articles not directly related to shells or shell collecting so long as they have some relevance.

Your contributions are greatly appreciated - editorial policies and formatting suggestions for anyone considering submitting articles for future editions are available on the Club's website, or you are welcome to consult the editors. Photos or drawings provided should be of a high resolution, & supplied as individual files (i.e. not embedded into tex The editors may be able to arrange for imaging of specimens if required. Unless of an in situ individual, an assortmer specimens in one shot or an artful context, it is preferred that specimens are photographed at 90° to the height/length axis of the shell, with apertural views of gastropod species preferred. Multiple views, angles or images of the same specimen are appreciated.

Identification challenge solution:



A) *Tritia burchardi* B) *Zemysia zelandica* C) *Conus lischkeanus*
D) *Amalda mucronata* E) *Paratrophon cheesemani exsculptus*
F) *Gari lineolata* G) *Cominella glandiformis*